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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,918	06/26/2003	David D. Martenson	D/A1690	7043
25453	7590	07/12/2005	EXAMINER	
PATENT DOCUMENTATION CENTER XEROX CORPORATION 100 CLINTON AVE., SOUTH, XEROX SQUARE, 20TH FLOOR ROCHESTER, NY 14644			ELLIS, SUEZU Y	
			ART UNIT	PAPER NUMBER
			2878	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/608,918

Applicant(s)

MARTENSON ET AL. 

Examiner

Suezu Ellis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 10-13, 20-30 and 46-55 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-30 is/are allowed.
- 6) ☒ Claim(s) 1-4, 10-13, 20, 21 and 46-55 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on June 26, 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **FINAL REJECTION**

### ***Response to Arguments***

Applicant's arguments with respect to claims 1-4, 10-13, 20, 21 and 46-55 have been considered but are moot in view of the new grounds of rejection.

### ***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on May 11, 2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 46, 50, 52 and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Barbehenn (US 5,929,789).

With respect to claim 46, Barbehenn discloses a position encoder to be used in ink-jet printers comprising a movable component (feed roller), an optical grating on a code wheel and a sensor wherein the code wheel is movable relative to the sensor

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pursuant to the movement of the mount for the encoder to facilitate in the encoder's rotation (col. 2, lines 21-24). Barbehenn discloses in Fig. 2, the optical grating comprising an optical track with a series of contiguously adjacent encoder bars that are substantially uniformly spaced center to center so as to have substantially uniform pitch. Barbehenn further discloses the contiguously adjacent bars include a plurality of contiguously adjacent first encoder bars (82, 84, 86) of first encoder bar transmissivities and a plurality of second encoder bars (88) of a substantially constant second encoder bar transmissivity, wherein each of the first encoder bar transmissivities is different from the substantially constant second encoder bar transmissivity.

With respect to claim 50 and 52, Fig. 2 illustrates the second encoder bars are disposed on both sides of the contiguously adjacent first encoder bars. Barbehenn further discloses the first encoder bars are darker than the second encoder bars, thus are less transmissive than the second encoder bars (col. 5, lines 27-35).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 10, 11 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khan (US 5,274,229) in view of Knierim et al. (US 5,600,352).

Hereinafter, Knierim et al. will be referred to as Knierim.

With respect to claims 1-3, 10, 11 and 21, Khan discloses an optical encoder that has a code wheel for modulating a beam of light and a sensor for detecting the modulated light (col. 1, lines 15-21). Khan illustrates in Fig. 1 the code wheel with an optical track comprising a plurality of first encoder bars with varying heights (1x, 2x, 4x) and a plurality of second encoder bars with substantially constant height (8x) wherein both sets of encoder bars are substantially uniformly spaced center to center so as to have a substantially uniform pitch (col. 3, lines 54-56). Fig. 1 further illustrates the first encoder bars gradually change height and are shorter and than the second encoder bars and the second encoder bars are disposed on both sides of the first encoder bars. Khan fails to expressly disclose the code wheel being in a printing apparatus that comprises of a print mechanism having a moveable component. Khan and Knierim are directed to a similar field of endeavor of encoder disks. Knierim discloses it is well known in the art to include an encoder disk in an ink-jet printer which includes a print mechanism having a moveable component (drum) (col. 10, lines 47-53). Knierim discloses in Fig. 1, the encoder (70) and the sensor (72) move relative to each other pursuant to movement of the drum (12). Knierim further discloses the drum rotates relative to an ink-jet print head which spans the width of the drum and further includes solid ink that is melted and provided to the print head (col. 5, lines 63-66; col. 6, lines 16-20). It would have been obvious to a person of ordinary skill in the art to use the

encoder of Khan in a printing apparatus in order to coordinate ink drop ejection with precise angular rotational increments of the drum.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Khan in view of Knierim and further in view of Jacobs et al. (US 5,563,591). Hereinafter, Jacobs et al. will be referred to as Jacobs.

With respect to claim 4, the modified Khan fails to expressly disclose the moveable component is included in an electrophotographic marking system. Khan and Jacobs are directed to a similar field of endeavor of encoder disks. Jacobs discloses it is well known in the art for an encoder disk to be attached to a rotating shaft which can be coupled to a drum (equivalent to a print drum) for use in an electrophotographic printing system (col. 8, lines 29-38). It would have been an obvious design choice to include the drum in an electrophotographic printing system so that the encoder can be used in other printers, such as a xerographic printer.

Claims 12, 13 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Khan in view of Knierim and further in view of Ito (JP 2004-239825A). For translation purposes, US publication (2004/0155178) will be used for referencing.

With respect to claims 12 and 13, the modified Khan fails to expressly disclose the first encoder bars gradually changing height and are taller than the second encoder bars and the first encoder bars and the second encoder bars having non-linear sides, however it would have been an obvious design choice to modify the encoder bars in

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order to produce a periodic optical pattern of various shapes, as taught by Ito (Figs. 11A, 11B).

Claims 51 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barbehenn.

With respect to claims 51 and 53, Barbehenn discloses the first encoder bars are darker and less transmissive than the second encoder bars and accordingly, the sensor will produce a sinusoidal output signals. Barbehenn fails to disclose an embodiment where the first encoder bars are lighter and more transmissive than the second encoder bars. It would have been an obvious design choice to a person of ordinary skill in the art to modify the first encoder bars to be lighter and more transmissive than the second encoder bars as another way to produce a sinusoidal output signal.

Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barbehenn in view of Loewen (US 5,017,776).

With respect to claim 55, Barbehenn fails to disclose the first encoder bars and the second encoder bars having non-linear sides. Barbehenn and Loewen are directed to a similar field of endeavor of encoders. Loewen discloses an optical encoder with alternating curved light (window – 200, 201) and dark (spoke – 203, 204) areas in Fig. 2 (col. 6, lines 41-45) that produce spiral images. It would have been obvious for a person of ordinary skill in the art to modify the encoder of Barbehenn to include non-linear sides of both sets of encoder bars in order to produce various shapes of images

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depending on the design choice of the pattern. However, the applicant has not disclosed that making the sides of the encoder bars non-linear solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the curved sides of the encoder bars.

Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barbehenn in view of Knierim.

With respect to claims 47 and 48, Barbehenn fails to disclose the moveable component comprising a print drum and an ink jet printhead and a further including a supply of solid ink that is melted and provided to the ink jet printhead. Knierim discloses in Fig. 1, the moveable component comprising a transfer drum (12), which is deemed equivalent to a print drum, or an ink-jet printhead (26). Knierim further discloses the inclusion of a supply of solid ink that is melted and provided to the ink jet printhead (col. 6, lines 16-20). It would have been obvious to a person of ordinary skill in the art to include a print drum and an inkjet print head in order to facilitate in the transferring of ink onto printing medium.

Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barbehenn in view of Jacobs.

With respect to claim 49, Barbehenn fails to disclose the moveable component comprising a print drum in an electrophotographic marking system. Jacobs discloses it is well known in the art for an encoder with an optical grating to be attached



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to a rotating shaft which can be coupled to a drum used in an electrophotographic printing process (col. 8, lines 29-38). It would have been an obvious design choice to modify the type of marking system in order to use the printer apparatus in non-ink-jet printers, such as a xerographic printer.

### ***Allowable Subject Matter***

Claims 22-30 are allowed.

With respect to claim 22, prior art fails to teach or reasonably suggest, either singly or in combination, a printing apparatus comprising a plurality of contiguously adjacent first encoder bars of first encoder bar widths and a plurality of second encoder bars of a substantially constant second encoder bar width, wherein the first encoder bars and the second encoder bars have non-linear sides and each of the first encoder bar widths is different from the substantially constant second encoder bar width.

Claims not specifically addressed are allowable due to their dependency.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

***Telephone/Fax Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suez Ellis whose telephone number is 571-272-2868. The examiner can normally be reached on 8:30am-7pm (Monday-Thursday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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